Energy Policy Act of 2005, Section 1234
Economic Dispatch Study
Questions for Stakeholders

Section 1234 of the Energy Policy Act defines economic dispatch as "the operation of generation facilities to produce energy at the lowest cost to reliably serve customers, recognizing any operational limits of generation and transmission facilities." With that definition in mind, please answer as many of the following questions as you wish, attaching supporting materials such as studies or testimony that was filed in state or federal regulatory proceedings to support your answer.

Please send your response by e-mail to Economic.Dispatch@hq.doe.gov **no later than September 21, 2005**. Be sure to include the name and phone number of an individual who can answer any questions that may arise about your comments. Thanks in advance for your assistance with this study.

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Questions

1. What are the procedures now used in your region for economic dispatch? Who is performing the dispatch (a utility, an ISO or RTO, or other) and over how large an area (geographic scope, MW load, MW generation resources, number of retail customers within the dispatch area)?

Response:

- Each Load Serving Entity (LSE) within the Balancing Authorities of North Carolina performs economic dispatch of its generation resources.
- There is no central clearing house in North Carolina or within the Balancing Authorities (with the exception of PJM) performing economic dispatch.
    - There are at least nine LSEs (CP&L, Duke, Yadkin, SEPA, NCMPA, NCEMC, Fayetteville Public Works Commission and the aggregate of Black Creek, Lucama and Statonsburg) performing economic dispatch to serve their loads within three Balancing Authorities (CP&L, Duke and Yadkin) in most of North Carolina.
    - PJM performs economic dispatch in a small portion of North Carolina that encompasses the load of at least three LSEs (Dominion North Carolina Power, NCEMC and NCEMPA).
    - The balkanization of economic dispatch makes it difficult for entities such as NCEMC, with loads in multiple Balancing Authorities, to optimize its generation resources and dispatch. For example, having to designate Network Resources in one Balancing Authority negates the benefits of load diversity in different Balancing Authorities.

- The LSEs in North Carolina provided approximately 4.4 million customers with over 121,000 GWh from over 28,000 MW of generating capacity in 2003.

2. Is the Act's definition of economic dispatch (see above) appropriate? Over what geographic scale or area should economic dispatch be practiced? Besides cost and reliability, are there any other factors or considerations that should be considered in economic dispatch, and why?

Response:

- The Act's definition of economic dispatch seems broad. At a minimum, details should be added about the geographical scope over which economic dispatch is to be performed.
- The geographical area for economic dispatch should be <u>at least</u> as large as a state, taking into consideration the constraints and natural limits of the electric system.
- However, the constraints and natural limits of the electric system should not be excuses for further or continuous fragmentation of the system but should be indicators of opportunities to improve the electric system and make it more robust.

3. How do economic dispatch procedures differ for different classes of generation, including utility-owned versus non-utility generation? Do actual operational practices differ from the formal procedures required under tariff or federal or state rules, or from the economic dispatch definition above? If there is a difference, please indicate what the difference is, how often this occurs, and its impacts upon non-utility generation and upon retail electricity users. If you have specific analyses or studies that document your position, please provide them.

Response:

- In the southeast economic dispatch is practiced on an entity by entity basis. Each entity using its own combination of generation and contracts develops a plan for their own least cost dispatch and adaquacy, some of the decisions are made days in advance due to the extended start times associated with large thermal units and the need for individual adequacy. The only attempt to optimize the dispatch regionally is through short term sales and purchases. This results in a sub-optimal dispatch on a regional basis. Attempts to optimize dispatch on a daily and hourly basis are further impeded by market rules that impede such short term transactions. The list of rules include;
    - Timing of OASIS reservations
    - Tagging timelines
    - Cost of energy imbalance impedes participation
    - Energy imbalance versus inadvertent energy
    - Lack of Firm hourly transmission

  Although there is communication between dispatching entities, reliability can be challenged due to somewhat uncoordinated dispatching decisions.

4. What changes in economic dispatch procedures would lead to more non-utility generator dispatch? If you think that changes are needed to current economic dispatch procedures in your area to better enable economic dispatch participation by nonutility generators, please explain the changes you recommend.

Response:

- A single unit commitment and dispatch across the broadest area leads to the lowest cost set of generators meeting the load while respecting reliability criteria. Within the Southeast no major reliability limitations exist that would impede a single area dispatch over the area.
- Although LMP has improved dispatch other models should also be considered.
- The effect on non-utility generation will vary, but retail load should benefit from improved economics.
- The most practical change is the creation of a market that allows all generation and DSM to meet the load requirements.

5. If economic dispatch causes greater dispatch and use of non-utility generation, what effects might this have – on the grid, on the mix of energy and capacity available to retail customers, to energy prices and costs, to environmental emissions, or other impacts? How would this affect retail customers in particular states or nationwide? If you have specific analyses to support your position, please provide them to us.

Response:

- Economic dispatch should result in the most economic set of resources (generation and transmission resources) being utilized to serve the load. It would be expected that the operation of any resource would be designed to be within the allowable emissions levels set by the states and Federal government.
- Dispatch is a different issue than allocation of costs and benefits. Assuming that the result of economic dispatch was to lower the overall costs of generating and delivering power to the ultimate consumers, there should be a methodology to provide those benefits to the consumers. At the present time we do not have an analysis of this issue. Any analysis or method to allocate costs and benefits would require the input and involvement of all stakeholder groups.

6. Could there be any implications for grid reliability – positive or negative – from greater use of economic dispatch? If so, how should economic dispatch be modified or enhanced to protect reliability?

Response:

- Economic dispatch should be designed to always protect or improve grid reliability. We refer to this as constrained least cost economic dispatch.

- Economic dispatch requires the utilization of all the elements of the power system to achieve the goal of "…produc(ing) energy at the lowest cost to reliably serve customers".
- In order to improve upon constrained least cost economic dispatch , the scope for planning the system will need to encompass large geographic areas. Planning of the transmission and generation systems over a larger area will result in a broader and unconstrained economic dispatch. Adequate infrastructure is necessary in order to achieve the goals of economic dispatch, and to provide for a reliable power system.
- As the transmission grid is changed, or new generation is added, it is important to consider those changes in an integrated fashion to achieve the stated objectives.
- A regional planning process should be implemented to help ensure the above objectives are met. There is currently a working group in PJM called the Regional Planning Process Working Group or RPPWG that is working to develop such a process. The mission of this working group is to identify modifications to the current transmission planning process by expanding the planning horizon and ensuring that transmission construction supports competitive wholesale markets. Responsibilities of the RPPWG include the following:
    - Develop a proposal to include a long term planning horizon with consideration given to the impacts/linkages to all other aspects of the planning process.
    - Develop a work plan for identifying/quantifying the metrics needed to perform a comprehensive evaluation of needs and benefits that integrates economic performance, operational performance, and system reliability.
    - Identify changes to the planning process to specifically encourage technological innovations to improve the security, reliability and capability of the grid.
- There is also an effort under way encompassing the LSEs within Duke and CP&L to develop a collaborative transmission planning process. The goal is to produce a long-term transmission plan that preserves reliability and enhances the access to resources outside the Balancing Authorities of Duke and CP&L.